TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE WYOMING SOIL CONSERVATION SERVICE

Biology No. 228 January 1986

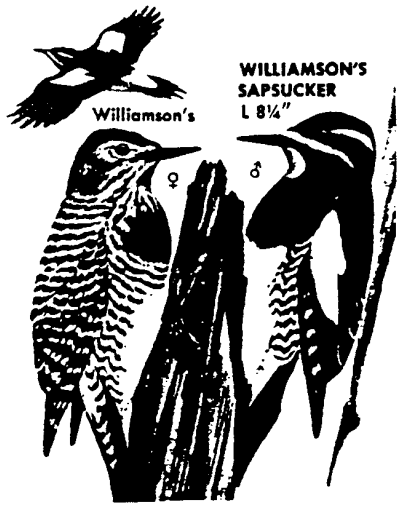
Subject: WILLIAMSON'S SAPSUCKER*

General

The Williamson's sapsucker (Sphyrapicus thyroideus) "...inhabits middle elevation pine forests and high elevation spruce-fir forests" as well as aspen stands throughout its range in the western United States. The Rocky Mountain subspecies (S. t. nataliae) exhibits altitudinal and latitudinal migration with little overlap between summer and winter ranges, while the Pacific Coast subspecies (S. t. thyroideus) exhibits a primarily altitudinal migration.

Food Requirements

The Williamson s sapsucker is a timber-drilling omnivore, although seasonal food habits are highly specialized. The Williamson's sapsucker is adapted to feeding on subcortical insects. The migratory habitat of the Williamson's sapsucker results from the need to be in ". ..areas where sap, active insects, and fruits are available throughout the winter." Sap and phloem fibers are the major dietary items during much of the nonbreeding season. During the period between arrival on the breeding grounds and hatching of the young, Williamson's sapsuckers in Colorado fed exclusively on sap and phloem of live conifers. Sap is high in sucrose and represents a high energy source, which is especially important in spring and early summer prior to the emergence of surface insects. Following the hatching of young, the diet shifted dramatically to almost exclusively ants, especially carpenter ants (Camponotus spp.) and wood ants (Formica spp.). The stomach contents of 17 sapsuckers collected during the breeding season consisted of 86 percent ants, 1 percent other insects, and 13 percent



Prepared by: Richard Rintamaki, State Biologist

State Resource Conservationist

*Information taken from Ecoregion M3113 Handbook and Habitat Suitability Index Models, Wildlife Species Narratives (literature searches), U.S. Fish and Wildlife Service, various dates between 1978-1984.

vegetable matter. One study collected prey items from the mouths of 20 Williamson's sapsuckers during the process of banding; 280 of 283 total insects were ants. Bachelor males continued feeding on sap throughout the nestling period of pairs, suggesting that the shift from sap to insects by nesting pairs was related to the needs of the nestlings.

Each pair of nesting Williamson's sapsuckers on a Colorado study area used four or five conifers as sap trees during the breeding season. Sap trees were significantly smaller in height and diameter when compared to the average size of available trees, a preference that may be related to the thinner bark and easier drilling of small trees. Douglas-fir (Pseudotsuga melnziesii) sap trees average 15.8 cm (6.2 inches) dbh and 6.3 m (20.7 ft) tall, compared to an average dbh of 25.0 cm (9.8 inches) and an average height of 10.5 m (34.4 ft) of available Douglas-fir trees. Ponderosa pine (Pinus ponderosa) sap trees averaged 26.9 cm (10.6 inches) dbh and 6.9 m (22.6 ft) tall compared to an average of 40.0 cm (15.8 inches) dbh and 9.0 m (29.5 ft) tall for all available ponderosa pine trees.

Nestlings are fed partially digested food during the first week following hatching. After the first week, nestlings are fed whole insects by both adults. Ants are obtained by gleaning on the trunks and limbs of conifers as well as on the ground. Young are capable of foraging on their own by gleaning within a few hours after leaving the nest.

Water Requirements

There is little information in the available literature regarding the water requirements of the Williamson's sapsucker. However, they have been reported to use small puddles of water for bathing and drinking during the summer.

Cover Requirements

The Williamson's sapsucker apparently inhabits a relatively wide variety of forested types throughout its range. It is considered to be most common in middle elevation forests of ponderosa pine, lodgepole pine (P. contorta), and Douglas-fir, although the species also inhabits subalpine forests of spruce-fir (Picea spp.-Abies spp.). However, lodgepole pine stands are considered to provide marginal habitat for the Williamson's sapsucker. Williamson's sapsuckers inhabit open stands of ponderosa pine as well as mature and old-growth mixed conifer forests in the northwestern United States. This species inhabits early successional conifer stands following fires, although it has not been reported associated with burns in the Rocky Mountain area. Williamson's sapsuckers in California nested in snags on a burned area, but foraged on live timber in an adjacent unburned stand. Breeding densities of Williamson's sapsuckers in an Arizona mixed conifer forest were similar on an unlogged area and a logged area even though tree [7.6 cm (3 inches) dbh] density was 626/0.4 ha (1.0 acre) on the unlogged area and 168/0.4 ha (1.0 acre) on the logged area.

Reproductive Requirements

Although the western subspecies of the Williamson's sapsucker (S. t. thyroideus) prefers coniferous forests for nesting, quaking aspen (Populus tremuloides) may be the preferred nest tree at least throughout the Rocky Mountain region. A literature review by one researcher revealed that virtually all aspen nest site records were for S. t. nataliae in the Rocky Mountain region, while nearly all records of lodgepole pine nest sites were for S. t. thyroideus in California. Pondersoa pine nest site records were reported for both subspecies. Williamson's sapsuckers in the Bear River Mountains of Utah and Idaho bred in the subalpine fir (Abies lasiocarpa) and Engelmann spruce (Picea engelmannii) seral stages, but not in the earlier aspen seral stage. However, the fir and spruce seral stages contained aspen, and habitat for the Williamson's sapsucker was described as having ". ..aspens for nest sites, but mostly conifers and dead trees for foraging." Eighty-six percent (49 of 57) of the nests on three study areas in Colorado and Wyoming were located in aspen. The remaining eight nests were located in pines where suitable aspen trees were unavailable. One study summarized 50 nest records of the Williamson's sapsucker (presumably all S. t. thyroideus) in the Pacific Northwest; 46 sites (92 percent) were in conifers and 4 (8 percent) were in aspen. Conifer snags may be of secondary preference to Williamson's sapsuckers and may be most often used during years of high breeding densities. On an Arizona study area dominated by ponderosa pine, Williamson's sapsuckers nested only in dead aspen or dead portions of live aspens even though most of the available snags were ponderosa pine. The sapsuckers nested in dead conifers on a subalpine area where aspens were not available. In Colorado, nests were ". ..most commonly in live aspen, but also in stumps or dead conifers." Aspens located near openings are apparently of greater value as nest sites than are aspen within dense conifer stands. Nest cavities may be reused from year to year, although pairs may also switch cavities within the same territory used previously or switch territories.

One researcher considered a dbh of 30.5 cm (12.0 inches) to be the minimum size of snag capable of supporting a nest cavity for the Williamson's sapsucker in the Pacific Northwest. Another researcher believes that the minimum size snag may differ by tree species. Ponderosa pine snags less than 45.7 cm (18 inches) are infrequently used by Williamson's sapsuckers since these smaller snags usually fall before becoming suitable for excavation. The minimum snag size for Williamson's sapsuckers in spruce snags is 30.5 to 38.1 cm (12 to 15 inches), while 30.5 cm (12 inches) is probably adequate for snags of other species. Forty aspen trees used for nesting in Colorado averaged 23.5 cm (9.3 inches) dbh and ranged from 18 to 32.4 cm (7.1 to 12.8 inches) dbh with 32.4 cm approaching the largest diameter trees available. Eight pines used for nesting on the same Colorado study area averaged 50.9 cm (20.0 inches) dbh and ranged from 34.2 to 54.8 cm (13.5 to 21.6 inches) dbh. Cavity height in aspens averaged 2.4 m (7.9 ft) and ranged from 0.9 to 5.1 m (3.0 to 16.7 ft) above-ground, while cavities in pines averaged 5.1 m (16.7 ft) aboveground, ranging from 0.8 to 7.9 m (2.6 to 25.9 ft). The larger diameters of pines apparently allowed nest cavities to be located higher aboveground than in aspens. However, the location of nest cavities may be primarily determined by the location of decayed wood in the tree. Sixty-nine percent (18 of 26)

of nests in an Arizona study area were in dead aspen (Scott et *al.* 1980). Nest heights averaged 7.6 m (25 ft) and ranged from 3.0 to 18.3 m (10 to 60 ft) aboveground, while heights of nest trees averaged 16.8 m (55 ft) and ranged from 7.3 to 30.5 m (24 to 100 ft). Diameters of nest trees averaged 35.6 cm (14 inches) dbh, ranging from 17.8 to 83.8 cm (7 to 33 inches) dbh.

One researcher calculated that 371 snags (dead or partially dead trees) 30.5 cm (12.0 inches) dbh per 100 ha (150/100 acres) are required to support maximum populations of Williamson's sapsuckers in the Blue Mountains of Oregon and Washington. Potential sapsucker density was considered to be directly correlated with snag density (e.g., 50 percent of the recommended snags would support 50 percent of the maximum population). However, another researcher indicated that this density should refer to suitable snags; i.e., those snags that are soft enough for excavation. For example, lodgepole pine snags typically lose their bark quickly and harden, becoming unusable for excavating birds.

The preference for aspen at nest sites, at least in the Rocky Mountain region, may be related to the soft core of aspen, even in live trees. Examination of 12 trees used as nest sites by Williamson's sapsuckers in Oregon indicated that areas of decayed wood were selected for cavity excavation. Sixty-five percent (13 of 20) of the aspens containing nests in a Colorado study showed external signs of infection by a shelf fungus (Fomesigniarius var. pupulinus) which may provide a visual cue that a tree is in a weakened condition and easier to excavate. Most nests in this study area were located in small stands of aspen [range = 0.024 to 1.171 ha (0.06 to 2.89 acres); mean = 0.34 ha (0.84 acres)] with an average stem density of 772.4 trees/ha (312.6 trees/acre) [range = 182 to 1,312 trees/ha (73.6 to 531 trees/acres)]. The nest sites were apparently". ..chosen for their proximity to suitable foraging habitat [i.e., open ponderosa pine stands] rather than on the characteristics of the aspen nest stand itself." The small aspen stands used for nesting were located in ephemeral or permanent drainages within stands of conifers. Aspen groves surrounding high mountain meadows are also typically inhabited by Williamson's sapsuckers in Rocky Mountain National Park. Extensive stands of aspen are not usually occupied unless conifers are available nearby for foraging. Williamson's sapsuckers in Arizona nested in aspen within ponderosa pine stands, but did not nest in a stand dominated by quaking aspen.

Interspersion Requirements

Williamson s sapsuckers establish territories around the nest site that are defended against other males of the same species as well as against other species of woodpeckers early in the breeding season. Defense is restricted to the nest tree later in the nesting cycle. Most nesting pairs in a Colorado study maintained home ranges of 4 to 9 ha (9.9 to 22.2 acres) with an average size of 6.75 ha (16.7 acres). The shape of the home range was strongly influenced by vegetation and topography. One study reported a territory size of 4 ha (10 acres) per pair of Williamson's sapsuckers in ponderosa pine forests.

Williamson's sapsuckers in an open ponderosa pine stand -in Colorado had a spring density of 3.7 birds/40.5 ha (100 acres) in April and May. One study found a breeding density of 10 pairs per 40.5 ha in an open aspen stand with abundant aspen snags and scattered conifers in Colorado.